YAKIMA RIVER COHO RESTORATION 9603302

SHORT DESCRIPTION:
Restore the population of naturally spawning coho in the Yakima River basin by transferring adult and/or juvenile coho from appropriate lower river hatcheries to selected habitats or acclimation ponds.

SPONSOR/CONTRACTOR: YIN
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SUB-CONTRACTORS:
Sea Springs, Beth Stewart

GOALS

GENERAL:
Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations, Program coordination or planning, Basinwide, Education, Reintroduction of an eliminated population

ANADROMOUS FISH:
Production, O&M, Research, M&E

NPPC PROGRAM MEASURE:
7.1H;7.4A;7.3B;7.4O.1

RELATION TO MEASURE:
As stated in 7.1H this project plans to assist in rebuilding coho runs above Bonneville Dam. This project also falls under 7.4A as a restoration of an eliminated population.

TARGET STOCK	LIFE STAGE	MGMT CODE (see below)
Coho	Adult, juvenile	S

AFFECTED STOCK	BENEFIT OR DETRIMENT
Steelhead	
Fall chinook	

BACKGROUND

Stream name:
Upper Yakima and Naches tribs.

Subbasin:
Yakima River

HISTORY:
This project was developed as a priority from salmonid enhancement/ restoration production measures contained in the Wy-Kan-Ush-Mi Wa-Kish-Wit—Spirit of the Salmon (The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes. The proposal was submitted to the U.S. v. Oregon Production Advisory Committee (PAC) for technical comments a couple of years ago. With PAC consensus on the technical merits of the project it was presented to the U.S. v. Oregon Policy Committee for endorsement. With full support of all members of the Policy Committee in 1996 as one of "the 15 high priority supplementation projects", this project was submitted on the Northwest Power Planning Council which approved it as one of the 15 and available for immediate implementation through BPA funding.

BIOLOGICAL RESULTS ACHIEVED:
Using Mitchell Act funds which provided low-cost acclimation facilities for Yakima River Coho smolt to adult survival rates have tripled over direct stream release which was the technique used in years past.

PROJECT REPORTS AND PAPERS:
Fiscal Year 96 Yakima Basin Coho Restoration Project

ADAPTIVE MANAGEMENT IMPLICATIONS:
By experimenting with releases at different life stages and release locations, more knowledge will be gained about the benefits of acclimation and the rearing of hatchery-influenced fish in more natural environments. This knowledge will help the region to make better decisions about how best to implement supplementation to further rebuilding goals throughout the Columbia River basin.

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:
Increase the number of adult coho available for harvest and natural spawning in the Yakima River basin as measured by dam counts at Prosser and Roza dams on the Yakima River and by spawning ground surveys. The project will also monitor and evaluate impacts to other species of concern such as other salmonids including bull trout.

CRITICAL UNCERTAINTIES:
The upper Yakima and Naches river basins contain a lot of excellent spawning habitat, and many brushy pools, side channels and "sloughs" for summer rearing and overwintering. This proposal seeks to directly increase the number of coho available to utilize these habitats. However, the basin also has many habitat problems which primarily affect the coho migration corridor. These problems include sedimentation, blocked access to habitat, destruction of pool habitat and riparian cover, inadequate summer discharges and high summer temperatures. Fortunately many programs are already in place to address these problems. Ongoing habitat improvement efforts include: constructing fences and planting native trees, shrubs, and grasses in riparian areas; conserving water for instream flows; regrading and revegetating stream banks to reduce erosion and sedimentation; creating velocity and hiding cover for juveniles via construction of rock barb and woody structures; excavating existing or new juvenile rearing alcoves; and researching ways to reduce agricultural pollutants in waters throughout the basin. Additional focus on habitat programs such as these will increase the benefits resulting from this proposal.
Risk containment will be a high priority for implementation of this restoration project. The M/E program will focus heavily on minimizing risks to other species of concern. The Yakima River Coho Species Plan developed by the Yakama Indian Nation discusses in detail issues related to species interaction.

BIOLOGICAL NEED:
Mullan (1984) estimated historical populations of 50,000 to 70,000 annually in the Yakima River drainage. Primarily due to habitat degradation and high exploitation rates, Yakima River coho were virtually extirpated with very few if any coho counted at Prosser Dam in the early- to mid-1980s. Under the U.S. versus Oregon Columbia River Fish Management Plan (CRFMP) an average of 650,000 coho smolts have been released annually in the lower Yakima River since 1987. Acclimation of these releases began in 1994. These releases have resulted in an increase in adult counts at Prosser Dam to over 600 coho in 1995 and over 1100 in 1996.

HYPOTHESIS TO BE TESTED:
The hypothesis to be tested is that by bringing in lower river hatchery coho and acclimating them as pre-smolts you will get sufficeint adult returns for natural production of the extirpated species. The null hypothesis is that by bringing in lower river hatchery coho you will not get sufficient adult returns to sustain natural production of the extirpated species.

ALTERNATIVE APPROACHES:
The approaches that were chosen for this project follows the guidelines of the Integrated Hatchery Operation Team (IHOT) policies and procedures and the supplementation guidelines as defined by RASP. If alternatives did not follow this criteria they were not considered.

METHODS:
Using early stock coho from lower river hatchery facilities, transport available fish in federal, state, or tribal tanker trucks to suitable habitats in the Yakima River basin. Identified habitats include: the upper Yakima River from Keechelus Dam to the Cle Elum confluence; Taneum Creek; the Little Naches drainage above Salmon Falls; the American River above approximately river mile 4.0; small sections of the upper Naches above the Tieton including the Rattlesnake, Little Rattlesnake, Nile, and Barton Creeks; portions of the Teanaway drainage; and Cowiche Creek below the forks. Fish may either be transferred as adults to

spawn naturally or spawned and reared at the hatchery to desired life stage prior to transfer. All juveniles resulting from transfers would be marked appropriately prior to outmigration. Juvenile counting facilities are available at Prosser and adult counting facilities are available at Prosser and Roza dams. Additional data on health and survival of transferred fish would be collected using techniques such as electroshocking and spawning ground surveys.

PLANNED ACTIVITIES

SCHEDULE:

Implementation Phase	**Start** 2/97	**End** 4/99	**Subcontractor**
Task Construction of Acclimation sites and M/E implementation			
O&M Phase	**Start** 3/97	**End** ?	**Subcontractor**
Task Acclimation of coho and M/E			

PROJECT COMPLETION DATE:

Depends on restoration success as monitored by M/E program and adaptive management.

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

Since this project is federally funded, it will have to conform to the guidelines of NEPA, BPA environmental analysis department has initially determined that this project qualifies as experimental with regards to supplementation and therefore qualifies for a "categorical exclusion". However, as the project becomes more fully implemented, an Environmental Analysis will be completed. This analysis has already begun in anticipation of its need for completion in the next year or so. For hatchery and acclimation site development, the Yakama Indian Nation has obtained the necessary environmental permits including HPAs, water rights, shoreline development, wetlands, etc. The Yakama Indian Nation has identified more than enough sites for their project that have cooperative landowners. Several of the sites are on land owned by the U.S. Forest Service which is an active and willing participant in this project. In general, there are no foreseen constraints that may cause this project to be delayed.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

This project is "low tech" with approximately $700,000 required over the first five years to cover transportation, marking, feeding, acclimation, monitoring/evaluation, and additional acclimation site investigation/development. The increase in the population of naturally spawning coho in the Yakima River basin will also depend on the rate at which habitat and passage conditions are improved and also on ocean survival. However, dam counts at Prosser Dam in 1994 - 1996 suggest that improved care, placement, and timing in the acclimation and release of juvenile coho can increase the number of returning adults. As habitat and passage improvements "take hold", it is expected that returning coho would eventually be self-sustaining.

Present utilization and convservation potential of target population or area:

700K coho have been reprogrammed to the Yakima River since 1987 under the U.S. v Oregon CRFMP. The purpose has been solely harvest augementation. This project will change the direction of this project to supplementation and natural stock restoration.

Long term expected utilization and conservation potential for target population or habitat:

For the Yakima River basin, coho salmon populations and their natural habitats shall be restored to levels of abundance and productivity sufficient to support sustainable annual harvests by Tribal and other fisheries.

Contribution toward long-term goal:

Through hatchery supplementation, the production (as opposed to habitat) part of the equation will be achieved in meeting the overall restoration goal.

Indirect biological or environmental changes:
Increased productivity and salmonid biomass in the Yakama River basin. Increase in watershed nutrient level from spawned out coho carcasses.

Physical products:
Tagging of fish will be required to monitor and evaluate the success of the project. Actual number of fish tagged will depend on further refinement of goals and tasks of the M/E program.

Assessment of effects on project outcomes of critical uncertainty:
With data collection of tagged fish from both juvenile and adult coho, YIN/WDFW will assess the use of out-of -basin (lower river early stock coho) in restoring historic populations to a productive level. Assessment will be based on adult returns and populations productivity.

Information products:
The data collected will determine the feasibility of using out-of-basin stocks as the broodstock source for coho restoration, the benefits of acclimation for coho, and the supplementation value of low cost, low tech facilities in salmonid supplementation activities.

Coordination outcomes:
Outcomes will be coordinated through meetings with WDFW, USFS and USFWS. Results will also be part of the PAC production reports that are developed annually.

MONITORING APPROACH
Using early stock coho from lower river hatchery facilities, transport available fish in federal, state, or tribal tanker trucks to suitable habitats in the Yakima River basin. Identified habitats include: the upper Yakima River from Keechelus Dam to the Cle Elum confluence; Taneum Creek; the Little Naches drainage above Salmon Falls; the American River above approximately river mile 4.0; small sections of the upper Naches above the Tieton including the Rattlesnake, Little Rattlesnake, Nile, and Barton Creeks; portions of the Teanaway drainage; and Cowiche Creek below the forks. Fish may either be transferred as adults to spawn naturally or spawned and reared at the hatchery to desired life stage prior to transfer. All juveniles resulting from transfers would be marked appropriately prior to outmigration. Juvenile counting facilities are available at Prosser and adult counting facilities are available at Prosser and Roza dams. Additional data on health and survival of transferred fish would be collected using techniques such as electroshocking, snorkling, screw traps and spawning ground surveys.

Provisions to monitor population status or habitat quality:
Naches/Yakima Basin Coho
Monitoring and Evaluation Task List

This plan is a working draft. Once a final plan is agreed upon for 1997, it can serve as a base M&E plan for future years, but should be reviewed annually and updated or modified as necessary.

Species of Concern: Spring chinook, fall chinook, and possibly summer steelhead.

1. Task: Determine the size distribution of the species of concern for the hatchery coho smolt outmigration period.

Strategies (for spring chinook): On a weekly basis sample the fish population(s) for range in fork length, mean fork length, and mean weight. A screw trap or traps will be placed within 5 miles of coho release locations to sample fish and collect this data. Some length versus time spring chinook data exists from the 1983-84 Yakima River Spring Study (BPA Report, 1985).

Timeframe: April 1 to June 15.
Personnel Need: Two-person crew per day of operation.

Strategies (for fall chinook): On a weekly basis sample the fish population(s) for range in fork length, mean fork length, and mean weight. Electroshocking and/or beach seining will be conducted within 2 miles of Toppenish Creek/Marion Drain confluence, Benton City, and/or Horn Rapids Dam to sample fish and collect this data.

Timeframe: April 10 to June 30.
Personnel Need: Three-person crew per day of operation.

2. Task: Determine the size preference range of hatchery coho (predator) on species of concern (prey).

It was determined that data already obtained from prior experiments should suffice.

3. Task: Determine the temporal and spatial distribution within the watershed for each species of concern.

Strategies: Collect data in conjunction with task number 1. Use this data together with existing fish distribution data to describe the distribution for each species of concern within the watershed.

4. Task: Determine the window of vulnerability by hatchery coho on the species of concern.

Strategies: Utilize data from tasks 1-3 to determine temporal/spatial distribution and vulnerable size range overlap of hatchery coho releases and each species of concern.

5. Task: Determine if there is evidence for hatchery coho predation upon the species of concern.

Strategies: Hatchery coho will be collected from river reaches where it is thought maximum overlap exists between the species of concern and hatchery coho. The stomach will be removed and preserved from each hatchery coho, recording where the fish was captured, and its length and weight. In the lab the stomachs will be examined for the presence of fish and identified to species (if possible).

For spring chinook: A screw trap or traps will be placed within 5 miles of coho release locations to collect this data.

Timeframe: April 1 to June 15.
Personnel Need: Two-person crew per day of operation.

For fall chinook: Electroshocking and/or beach seining will be conducted within 2 miles of Toppenish Creek/Marion Drain confluence, Benton City, and/or Horn Rapids Dam to collect this data.

Timeframe: April 10 to June 30.
Personnel Need: Three-person crew per day of operation.

6. Task: Investigate potential interactions between hatchery coho and the species of concern.

Strategies: Snorkel surveys would be utilized to perform this task but research personnel believe that this task is not feasible given flow conditions or necessary since some data will be collected from the Methow River. Also, documentation exists in published literature.

7. Task: Investigate potential competition between hatchery coho and the species of concern.

It was determined that a laboratory-type experiment to collect competition data would not be worthwhile. Some data on competitive interactions will likely be collected as part of task number 6.

8. Task: Determine the smolt-at-release to smolt-at-McNary Dam survival.

Strategies: Though recommended with the use PIT tags to collect smolt-to-smolt survival data, not feasible to do this year because of tag unavailability.

Data analysis and evaluation:
Juvenile and adult survival results by CWT interception plus reproductive success by spawning ground surveys. Traps will provide data on levels of risk from predators on the potential success of the project.

Information feed back to management decisions:
Through U.S. v. Oregon Production Advisory Committee and Policy Committee. The Yakama Nation Fish and Wildlife Committee will be informed continually of project results.

Critical uncertainties affecting project's outcomes:
This project has the advantage of being located in the Yakima River Basin, the site of a major supplementation research effort under the YKFP. Results from their test and hypothesis will be considered and incorporated as deemed appropriate.

EVALUATION
Increased early run coho escapement and productivity in the Yakima River Basin. Improve smolt to smolt survival from acclimation releases as measured at Prosser and Mc Nary Dam. Enhanced upriver early stock coho runs resulting in increased tributary, Zones 1-6, and ocean harvest.

Incorporating new information regarding uncertainties:
New information will be incorporated through joint meetings with WDFW, USFS, USFWS and YIN. Project results will also be funneled through the U.S. v. Oregon CRFMP via PAC production reports to the U.S. v. Oregon Policy Committee.

Increasing public awareness of F&W activities:
Through the Fisheries Resource Management's Department of the YIN's public informations specialist Carol Craig. She is responsible for coordinating FRM project development with NPPC, BPA, local interest groups and the media.

RELATIONSHIPS

RELATED BPA PROJECT	RELATIONSHIP
5510400	

OPPORTUNITIES FOR COOPERATION:
As mentioned, this project is directly related to other projects seeking to improve habitat conditions in the Yakima River basin including: Yakima River Basin Water Enhancement Project (YRBWEP), Jobs for the Environment, Salmon Corps (AmeriCorps), Yakima River Salmon Habitat Enhancement Project, Yakama Nation Riparian Demonstration Projects, Adopt-A-Stream Volunteer Programs, Yakima Resource Management Cooperative, and the Washington State DOE Water Quality Research Project. It is also related to the Yakima Fisheries Project (YFP) which seeks to rebuild naturally spawning anadromous fish stocks historically present in the Yakima River basin. Other projects seeking to improve fish passage in the mainstem Columbia River will also impact the results of this proposal. Finally, the project is consistent with regional goals identified in the NPPC Fish and Wildlife Program, the U.S. versus Oregon CRFMP, wy-kan-ush-mi wa-kish-wit the 1995Tribal Spirit of the Salmon Restoration Plan, and the NMFS Proposed Recovery Plan.

COSTS AND FTE

1997 Planned: $143,360

FUTURE FUNDING NEEDS:

FY	$ NEED	% PLAN	% IMPLEMENT	% O AND M
1998	$163,000	20%	50%	30%
1999	$290,000	20%	50%	30%
2000	$250,000	10%	30%	60%
2001	$245,000	5%	25%	75%
2002	$245,000	3%	20%	77%

PAST OBLIGATIONS (incl. 1997 if done):

FY	OBLIGATED
1996	$97,652
TOTAL:	$97,652

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

OTHER NON-FINANCIAL SUPPORTERS:
US Forest Service, WDFW, USFWS

LONGER TERM COSTS: $245,000 most of which should be for O/M of facilities and M/E program.

1997 OVERHEAD PERCENT: 26.6% of base

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:
Aplies to all direct cost.

CONTRACTOR FTE: 14 - 15

SUBCONTRACTOR FTE: 2